CIGWELD

ENGINE DRIVEN WELDER
GENERATING SET

MPM 12/400 I-KA
(Part Number 636804)

DOC No: EDW0005 Date: 16-July-97
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GENERAL USE INSTRUCTIONS

Read the instructions carefully; proceed according to the regulations in use in the country where the machine will operate.

TRANSPORTATION

- The machine must be fixed securely to the motor vehicle if it has to be moved to the place of use. Raise the machine using the lifting eye if the model provides it; otherwise, lift it using a forklift, taking care that the weight is well balanced on the two forks. Keep well clear during these operations; furthermore, we suggest not to keep the machine suspended for long.
- If the machine is mounted on a wheels trolley or trailer, be sure the machine is stable and secure before use.

CAUTION

- **Note:** The generating set or the welder is furnished WITHOUT lubricating oil. Provide the machine with **"10 W 40"** multi-grade oil indicated for temperatures from - 20°C to 40° C in the quantity indicated in the engine SPECIFICATION section.
- **Note:** If the machine is fitted with a water cooled engine fill the radiator circuit with a solution made up by 50% water and 50% antifreeze liquid in the quantity indicated in the engine SPECIFICATION section.
- **Note:** The generating set is furnished with a flat battery and without acid. Fill it using sulphuric acid in a 30% - 40% concentrated solution to cover the elements. During this operation, we suggest the operator use protective gloves and goggles; accidental skin contact with the sulphuric acid solution must be washed up immediately with cold water and, if necessary, a doctor must be consulted.
- **Note:** Do not disconnect battery cables when the engine runs. This could result in serious damage to the machine.
- **Note:** BEFORE OPERATING THE MACHINE the neutral, or the equivalent winding point, MUST be connected effectively to earth using an earth stake (without any switch or other device that may interrupt the electrical connection) from the earth stud available on the machine, and identified by the symbol:

- **Note:** for normal transportation, follow the instructions as specified in the TRANSPORTATION section.

RUNNING IN

For the first 50 hours of operation of the machine do not employ more than 70% of the maximum power indicated in the technical specifications.

STARTING AND WORKING

1- Make the earth connection (see the USE INSTRUCTIONS).

2- If the machine model IS NOT equipped with a earth leakage circuit breaker the available socket is intended ONLY for connecting the machine to a switchboard equipped with all protection devices imposed by current law regulations.

3- Check the state and efficiency of the cables.

4- Make sure that all the switches and electric connections are in the right position for starting (see USE INSTRUCTIONS and CONTROL PANEL DESCRIPTIONS).

5- Use the machine in well ventilated places, taking care that the exhaust gas and the welding fumes produced (where welders are used) do not stagnate. Keep the machine away from walls or other obstacles in order to avoid air or gas recycling. If the machine is employed in closed places, use forced ventilation in order to ensure proper air recycling.

6- While welding, eyes and body must be protected by gloves, mask and appropriate clothes.

7- Fuel refill must not be made while smoking or close to flames. This operation must be done when the engine is switched off.

8- Do not over fill the tank and clean up any spillage.

9- Check daily for loss of fuel or lubricating oil.

10-For machines provided with a liftable canopy engage the canopy securing brackets where fitted.

WARNING

- Do not connect the machine to the commercial electric network.
- Do not work close to flammable materials or where there is explosive gas or vapours.
- Do not work in confined or poorly ventilated places.
- Do not touch the exhaust muffler or adjacent components.
- Do not carry out service operations while the engine is running.
- Any service on the electrical circuit must be done when the engine is stopped and only by qualified technicians.
- Keep clear of moving parts of the engine while it is operating and do not approach the machine with loose fitting clothing.

SERVICE AND CLEANING

We suggest frequent cleaning of the machine since the presence of dirt can compromise efficiency.

The frequency of this operation depends on the environment in which the machine is used. We advise to pay special care to the service of::

OIL LEVEL, OIL FILTER, AIR FILTER, FUEL FILTER, COOLING LIQUID LEVEL, RADIATOR, VENTILATION DUCTS AND INTAKES, BATTERY ENGINE USE AND SERVICE manual and the SPECIFICATION section to know how and when it is useful to do it. The extraordinary service operations not mentioned herein require the aid of specialised technicians (see the Engine Dealers list).

For service intervals consult the ENGINE USE AND SERVICE manual and the SPECIFICATION.

ADJUSTMENTS AND REGULATIONS

All necessary controls are located on the main control panel and are properly explained in the section FRONT PANEL DESCRIPTION.

We advise the operator against tampering with the engine or the internal electrical components.

Note: Modification of the normal parameters can compromise the reliability of the machine.

PROLONGED STANDING PERIODS

If the machine has to be stopped for a long period (more than one year), we suggest to leave the motor oil and the fuel in and the water in the radiator in order to avoid oxidising effects.

When the machine is to be used, the liquids must be replaced, the battery must be charged; the belts, pipes and rubber hoses must be checked and a visual inspection of the electrical connections must be done.

SCRAPPING

In order to preserve the environment, it is advised to dispose of the oil, fuel and battery in an approved manner. For the complete range of materials, see the list below:

FERROUS and NON-FERROUS MATERIALS:
steel, cast iron, aluminium, copper, brass are used in the structure of engine, alternator, transformers, etc.

PLASTIC MATERIALS:
rubber, bakalite, epovit, lexan are used for the instruments, engine pipes, junction boxes and connectors, fuel tank, fuel cap, wheels, anti-vibration dampers, condenser housings, fans, belts, filters and hoses.

ELECTRONIC MATERIALS:
various components, diodes, resistors, electronic panels.

VARIOUS MATERIALS:
rock wool, sound proofing materials.

LIQUIDS:
fuel, gasoline, cooling liquids, battery acid.

TECHNICAL SPECIFICATION

POWER PLANT INFORMATION

Part number	636804
Description	MPM 12/400 I-KA

WELDING GENERATOR D.C.

Maximum power	400A @ 36V
Rated output at 60% duty cycle	350A @ 34V
Range of continuous control	30A to 400A
Duty cycle period	5 minutes
DC open circuit voltage	70V
Insulation class	F
Mechanical protection	IP 23
CC mode	30A to 400A
CV mode	18V to 40V

AUXILIARY GENERATOR

Generator type	Asynchronous
Three phase power	12kVA @ 400V
Single phase power	10kVA @ 230V
Frequency	50 Hz

RECOMMENDED MANUAL METAL ARC WELDING ELECTRODE

Electrode Description	Maximum Electrode Diameter
General purpose & low hydrogen	6.0mm
Cellulose	6.0mm
Iron powder	6.0mm

ENGINE

Make/Type	Kubota D 1105-E
Number of cylinders	3
Displacement	1124 cc.
Diesel engine output	25 HP
Engine speed	3000 rpm
Cooling	Water
Fuel tank capacity	36.5 Litres
Oil capacity	5.1 Litres
Starter	Electric
Battery	12V - 43 Ah
Acoustic energy emission	97 dB(A)
Acoustic pressure @ 1 metre	89 dB
Acoustic pressure @ 4 metre	77 dB
Average fuel consumption	275 gram/kW/hour
Average operating hours	15 hours

DIMENSIONS AND WEIGHT

Dimensions (Length x Width x Height)	1590mm x 730mm x 920 mm
Weight	460 Kg

ENGINE WARRANTY AND SPARE PARTS

1.1 INTRODUCTION

Carefully follow the **KUBOTA** engine operation manual for safe operation and long service life of this product.

1.2 ENGINE WARRANTY

To secure warranty for the engine ensure that the warranty certificate is fill in and mailed to the **Tutts** state branch office (KUBOTAs Australian engine distributor).

The engine is warranted for twelve (12) months from date of purchase or one thousand (1000) hours which ever is sooner. This warranty is limited to the replacement or repair, at Tutts workshop of any parts proven defective, under normal use and service within the warranty period. For warranty service outside a Tutts workshop, all travelling time and mileage incurred, will of necessity, be charged to the owner of the equipment who ordered the off site warranty repair(s).
New engine warranty does not apply to maintenance items such as filters, hoses, belts, preheaters, injection nozzles, packing and seals, etc.

Tutts Branch Network	Tutts (Sydney):	2 South St. Rydalmere NSW 2116
	Tutts (Perth):	50 Great Eastern Hwy South Guildford WA 6055
	Tutts (Brisbane):	39 Suscatand St Rocklea QLD 4106
	Tutts (Melbourne):	Gwelo St Tottenham VIC 3012

Tutts Dealer Network

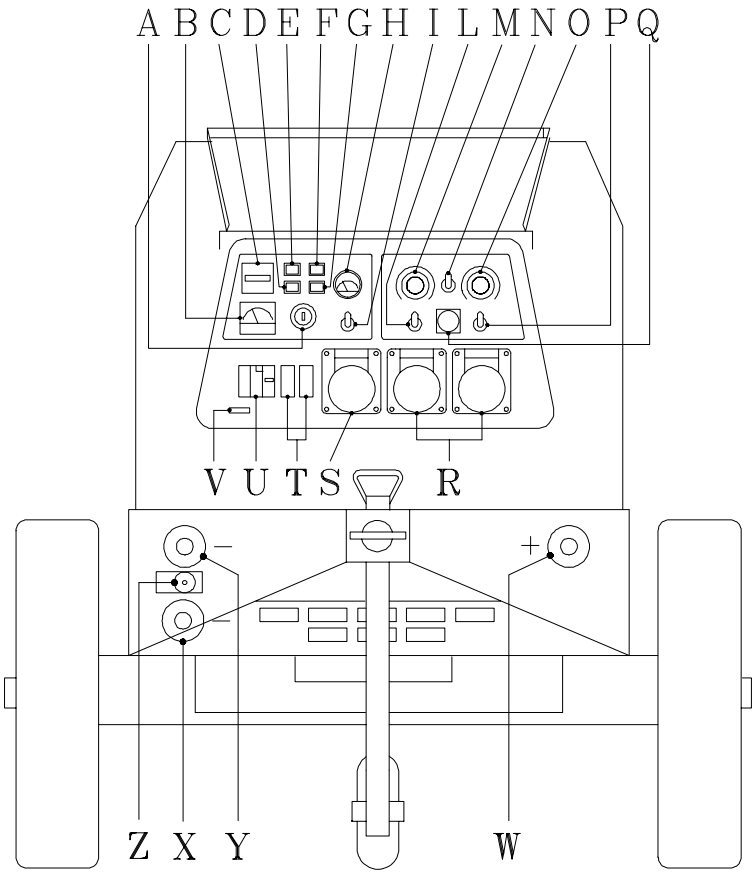
Queensland:	Andrew's Agricultural Centre Pty Ltd	- Goranvale, Cairns Ph: (070) 565222
		- Innisfail Ph: (070 616466
		- Tully Ph: (070) 681311
	Fishabout Pty Ltd	- Mackay Ph: (079) 534752
	Dore Power Equipment Pty Ltd	- Roma Ph: (076) 221883
New South Wales:	SJ & ML Foster	- Moree Ph: (067) 525 488
	Clares Diesel Service Pty Ltd	- Coffs Harbour Ph: (066) 525121
	Kentan Pty Ltd	- Hexham, Newcastle Ph: (049) 648275
Tasmania:	Diesel & Marine Pty Ltd	- Newtown, Hobart Ph: (03) 62281755
South Australia:	Mac Pac Sales & Service Pty Ltd	- Wingfield, Adelaide Ph: (08) 82431422

1.3 SPARE PARTS

KUBOTA engine: Contact **Tutts** (in Australia) for spare parts and service assistance. Specify the engine model number, serial number, name of part (with code number), Engine Driven Welder model name (with code number) and manufacturers name when you contact your KUBOTA Dealer. KUBOTA guarantees an efficient technical support throughout Australia and New Zealand.

Generator and equipment: Contact your local CIGWELD Distributor for spare parts. Specify the Engine Driven Welders model number, serial number and name of part (with code number) when ordering spare parts. Refer to the Spare Parts List from page 13.

FRONT PANEL DESCRIPTIONS



A	Ignition key	**O**	Arc force regulator
B	Single phase voltmeter	**P**	Basic / Cellulose switch
C	Hourmeter	**Q**	Wire feeder connector 14 pin
D	Water temperature lamp	**R**	230V single phase outlet
E	Battery charge lamp	**S**	400V three phase outlet
F	Oil pressure lamp	**T**	16A single phase circuit breaker
G	Glow plug lamp	**U**	ELCB (25A earth fault protection)
H	Fuel meter	**V**	Serial number
I	Throttle switch	**Z**	Earth connection
L	CC/CV mode select	**X**	Welding socket : negative connection for CV-WORK
M	Welding current control	**Y**	Welding socket : negative connection for CC-WORK
N	Remote control switch	**W**	Welding socket : positive connection

OPERATING INSTRUCTIONS

1.1 EQUIPMENT

GROUNDING CONNECTION

- This machine has auxiliary power capability and grounding of the frame and case is recommended. Refer to your local Supply Authority or Australian Standard AS3000 for detailed earthing instructions. Connect the earth wire to the Earth connection located on the front of the machine.

2.1 EARTH FAULT PROTECTION

- Supply Authorities recommend that protection devices immediately disconnect all power in the event of an earthing fault. This equipment is fitted with a Earth Leakage Circuit Breaker (ELCB) that interrupts the auxiliary power circuit within 0.2 seconds when the earth leakage is greater than 30 mA.

- If a fault occurs in equipment connected to the auxiliary power supply, the outer casing may become live and result in serious injury. The Engine Driven Welder must be properly earthed. Refer to your local Supply Authority or Australian Standard AS3000 for detailed earthing instructions. The user is responsible for connecting this Engine Driven Welder to earth.

3.1 USE AND TESTING OF EARTH FAULT PROTECTION

- Switch the ELCB lever up to setting **I (ON)**. Test by pressing the test button while the engine is running. This will result in the ELCB tripping resulting the lever returning to setting **0 (OFF)**. Reset to setting **I (ON)**.

- If the ELCB trips repeatedly while operating auxiliary equipment, have the equipment tested by a qualified electrical tradesperson.

4.1 STARTING ENGINE

- Check that engines fuel tank has been filled with diesel and the sump has been filled with lubricating oil as specified in the Engine Manual.

- Position the ignition key on the first step for preliminary heating of the glow plugs, the glow plug light illuminates. When glow plug light turns off, start the engine by moving key completely clockwise.

- After starting the engine, allow it to warm up by waiting 10s minute before loading the Engine Driven Welder.

- Do not move the throttle control lever.

5.1 USE OF ENGINE DRIVEN WELDER AS A WELDER

- Insert welding cable plugs into relevant sockets.

- Set the current/voltage control knob on the front panel to the desired value on the Engine Driven Welder. Take care that the REMOTE CONTROL switch is in **0** (OFF) position.

- Set the Arc Force control to **I** (ON) or **0** (OFF) position.

- Remote current control can be achieved by using a remote control device.

- When operating with remote control switch the remote switch control to position **I** (ON) and connect the cable of the remote control unit to the 14 pin remote control socket.

- Connected the **Electrode Lead** to the positive terminal and the work lead to the negative terminal.
  Note: Stick electrodes are generally connected to the positive terminal but if in doubt consult the electrode manufactures literature.

- In standby mode, ie not welding or supplying power to auxiliary outlets, the engine idles at approximately 2000 rpm.

- When an arc is struck or the unit is supplying power to auxiliary outlets then the engines speed increases to approximately 3000 rpm. The returns to idle speed approximately 25 seconds after welding has ceased.

6.1 CONSTANT CURRENT (CC) MODE

- Set the CC/CV mode switch to the mode CC position.

- If using a remote control pendant, plug remote pendant into the 14 pin remote control socket and set the REMOTE CONTROL switch to the REMOTE position. Set the REMOTE CONTROL switch to the PANEL position if a remote pendant is not used.
  Note: When a remote control pendant is fitted (see **'Q'** on page 7), the Welding current/voltage control is switched out of the circuit and remote control pendant has full control over the welding current.

- For MMAW (stick) welding connected the **Electrode Lead** to the positive terminal (see **'W'** on page 7) and the work lead to the negative terminal (see **'Y'** on page 7).
  Note: Stick electrodes are generally connected to the positive terminal but if in doubt consult the electrode manufactures literature.

- For GTAW (TIG) welding connected the **Electrode Lead** to the negative terminal (see **'Y'** on page 7) and the work lead to the positive terminal (see **'W'** on page 7).

7.1 CONSTANT VOLTAGE (CV) MODE

- Set the CC/CV mode switch to the mode CV position.

- Connect wire feeder cable to 14 pin remote control socket.

- If a remote control pendant is plugged into the remote control socket of the wirefeeder then set the REMOTE CONTROL switch to the REMOTE position. Set the REMOTE CONTROL switch to the PANEL position if a remote pendant is not used.
  Note: When a remote control pendant is fitted (see **'Q'** on page 7), the Welding current/voltage control is switched out of the circuit and remote control pendant has full control over the welding voltage.

- For GMAW (MIG) welding connected the **Electrode Lead** to the positive terminal (see **'W'** on page 7) and the work lead to the negative terminal (see **'X'** on page 7).

8.1 USE OF ENGINE DRIVEN WELDER AS A GENERATING SET

- Start the engine ass described in section **4.1**

- Switch the ELCB lever up to setting **I (ON)**. Switch the single phase 16A CB lever up to setting **I (ON)**.

- The single phase voltmeter (see **'I'** on page 7) reads approximately 170V when the engine is at idle speed.

- In standby mode, ie not welding or supplying power to auxiliary outlets, the engine idles at approximately 2000 rpm.

- When an arc is struck or the unit is supplying power to auxiliary outlets then the engines speed increases to approximately 3000 rpm. The returns to idle speed approximately 25 seconds after the auxiliary equipment is disconnected from the auxiliary outlets.

9.1 STOPPING ENGINE

- Disconnect any load from the auxiliary outlets and the welding terminals of the Engine Driven Welder.

- Wait approximately 1 minute then turn the ignition key to the **0** position and the motor will stop.

10.1 ENGINE PROTECTION

- The DAS Engine Protection Device checks for *low oil pressure, no battery charge, high water temperature and low fuel level* conditions when the Engine Driven Welder is in operation.

- When a *low oil pressure, no battery charge, high water temperature or low fuel level* condition occurs the DAS stops the engine and illuminates the corresponding lamp on the control (expect for the low fuel level condition). When the faulty condition has been removed the engine can be re-started.

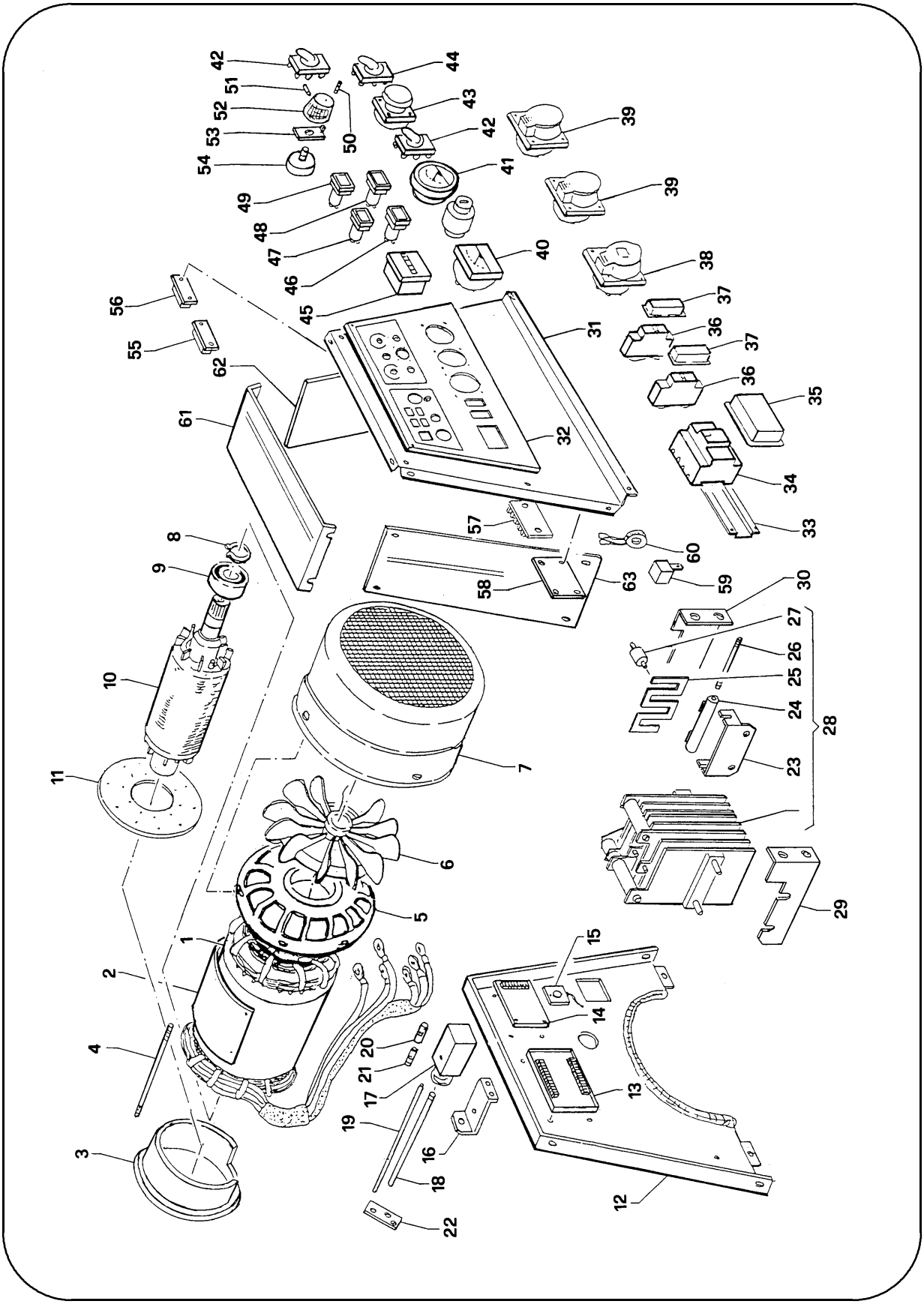
- Note that if the *low oil pressure, no battery charge, high water temperature or low fuel level* condition is still present when after the engine is re-started then the DAS Engine Protection Device will stop the engine after approximately one minute has elapsed.

11.1 WARNING

- In order to preserve the engine performance CIGWELD strongly recommends that the maintenance schedule is adhered to as specified in the engine manufacturer "Use and maintenance" user manual. Poor maintenance could result in a shorter operating life, decreased performance and loss of engine warranty.

- DO NOT disconnect the battery from the Engine Driven Welder when the engine is running as this action will cause the alternator regulator to fail.

MPM 12/400 I-KA
(Part Number 636804)



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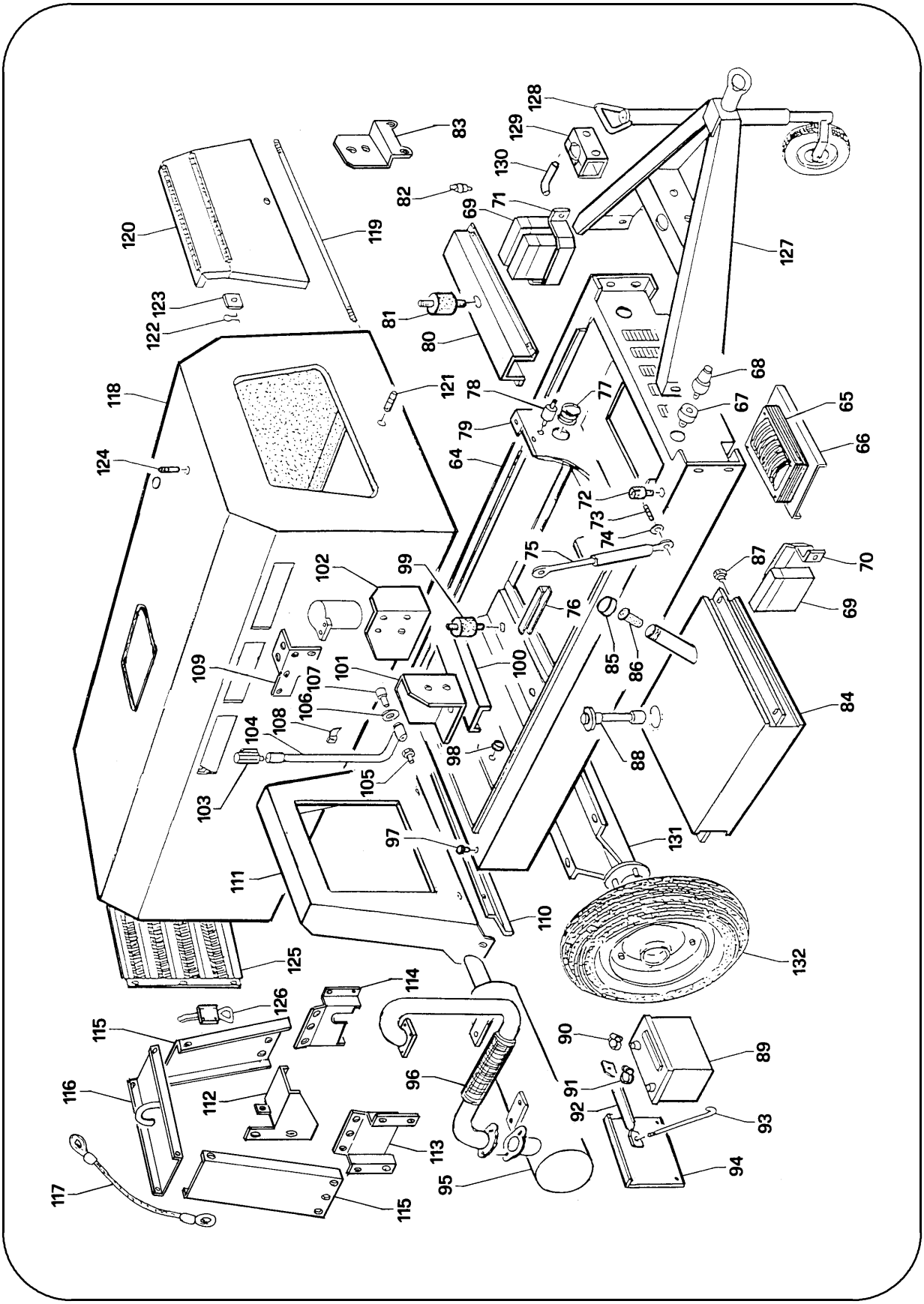

SPARE PARTS LIST MPM 12/400 I-KA (Part Number 636804)

Item no	Ordering no	Description
1	OGS19493	Stator
2	OGS18512	Stator protection
3	OGS18486	Engine connection flange
4	OGS11446	Stator tie rod
5	OGS18699	Flange with bearing seat
6	OGS10175	Fan
7	OGS18764	Fan cover
8	OGSO905	Circlip
9	OGS903	Bearing 100/45/25 2RS
10	OGS18368	Shaft with rotor
11	OGS14339	Flex plate
12	OGS18369	Panel
13	OGS18576	Electronic panel GS9603/A
14	OGS993	Amperometric relay
15	OGSOO79	Diode / heatsink assy
16	OGS16259	Solenoid support
17	OGS991	60x60x150 solenoid
18	OGS12673	Shaft for solenoid
19	OGS12674	Wire for solenoid
20	OGS588	Fuse holder
21	OGS12284	8A fuse
22	OGS18310	Bowden support
23	OGS18724	Resistor support
24	OGS12776	100 Ohm - 75 W resistor
25	OGS18723	Shunt
26	OGS846	Resistor tie rod
27	OGS17245	20x20 shock absorber
28	OGS18760	Rectifier assembly
29	OGS18872	Left plate rectifier
30	OGS18873	Right plate rectifier
31	OGS18708	Front and cover

SPARE PARTS LIST MPM 12/400 I-KA (Part Number 636804)

Item no	Ordering no	Denomination
32	OGS19498	Front plate
33	OGS10057	Plate for earth fault protection
34	OGS839	25A earth fault protection
35	OGS13933	Protection
36	OGS632	16A circuit breaker
37	OGS13191	Protection
38	OGS19483	400V 20A three phase socket
39	OGS19482	230V 15A single phase socket
40	OGS322	300V F.S. voltmeter
41	OGS11688	Fuel meter
42	OGS12163	Switch assembly
43	OGS18225	Socket for remote control and wire feeder 14 poles
44	OGS910	CC/CV switch assembly
45	OGS912	Hourmeter
46	OGS16959	Water temperature lamp
47	OGS10264	Battery charge lamp
48	OGS15380	Glow plug lamp
49	OGS19458	Oil pressure lamp
50	OGS17519	Pin
51	OGS17521	Grub screw
52	OGS18844	Potentiometer knob
53	OGS18728	Plate
54	OGS909	1K potentiometer
55	OGS14370	115V ac relay
56	OGS14197	24V ac relay
57	OGS12763	Terminal board assembly
58	OGS16505	DAS: automatic stop for engine protection
59	OGSO336	12V relay
60	OGS13407	Amperometric transformer
61	OGS16267	Cover
62	OGS16265	Left hand cover

SPARE PARTS LIST MPM 12/400 I-KA (Part Number 636804)

Item no	Ordering no	Denomination
63	OGS16266	Right hand cover
64	OGS17255	Frame
65	OGS12786	Reactor
66	OGS18869	Plate
67	OGS836	Welding outlet
68	OGS886	Plug for welding outlet
69	OGS16940	3x60µF capacitor
70	OGS16896	Plate for capacitor
71	OGS16934	Plate for capacitors
72	OGS11410	Pin
73	OGS12531	Tie rod
74	OGS12532	Washer
75	OGS11621	60kg gas spring filter
76	OGS15526	Plate for canopy
77	OGS10267	1" ¼ gas rubber wire holder
78	OGS11707	Insulator
79	OGS18370	Panel
80	OGS18427	Stator bracket
81	OGS927	50x50 shock absorber
82	OGS16468	Fuel prefilter
83	OGS19499	Air filter support
84	OGS15246	Fuel tank
85	OGS16271	Fuel filter cap
86	OGS16272	Fuel prefilter
87	OGSO923	Fuel drain cap
88	OGS15613	Fuel level gauge
89	OGS425	43Ah 12V Battery
90	OGS14247	Positive battery charging clip
91	OGS14248	Negative battery charging clip
92	OGS11726	Battery clamp
93	OGS948	Tie rod

SPARE PARTS LIST MPM 12/400 I-KA (Part Number 636804)

Item no	Ordering no	Denomination
94	OGS16190	Battery cover
95	OGS16191	Silencer
96	OGS18308	Silencer extension
97	OGS14300	Rubber puffer
98	OGS11312	Dia. 16 rubber wire holder
99	OGS13493	50x35 shock absorber
100	OGS17749	Engine support
101	OGS18302	Left engine support bracket
102	OGS18303	Right engine support bracket
103	OGS11817	3/8" cap
104	OGS14775	Oil drain pipe
105	OGS18309	Screw
106	OGSO873	Washer
107	OGSO872	M14 screw
108	OGS12728	Clip for pipe
109	OGS18618	Filter support
110	OGS18871	Plate
111	OGS18870	Panel
112	OGS18425	Engine stator protection
113	OGS19496	Left plate for hook
114	OGS19497	Right plate for hook
115	OGS19495	Panel support hook
116	OGS19494	Hook
117	OGS16119	Steel cable
118	OGS16278	Canopy
119	OGSO881	Pivot shaft
120	OGS16279	Instrument front cover
121	OGS12529	Locking hook (closed front cover)
122	OGS12526	Spring
123	OGS12527	Plate
124	OGS12528	Locking hook (opened front cover)

SPARE PARTS LIST MPM 12/400 I-KA (Part Number 636804)

Item no	Ordering no	Denomination
125	OGS16280	Air grate
126	OGS10530	Frame locking hook
127	OGSOO90	Rubber
128	OGS949	Jog wheel
129	OGSO548	Adjustable clamp
130	OGSO924	Brace
131	OGS15247	Axle
132	OGS10538	Wheel